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GenCore version 5.1.6

OM protein - protein search, using sw model

Run on: June 18, 2003, 03:16:37 ; Search time 37.0454 Seconds
(without alignments)
1215.770 Million cell updates/sec

Title: US-09-807-933B-1
Perfect score: 1836
Sequence: 1 MKFITIASSALLALALGTEM.....TYKEVTCPKEITAKTGCSRK 338

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 908470 seqs, 133250620 residues

Total number of hits satisfying chosen parameters: 908470

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : A_Geneseq_101002:*
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22: /SIDS2/gcgdata/geneseq/geneseqp-embl/AA2001.DAT:*
23: /SIDS2/gcgdata/geneseq/geneseqp-embl/AA2002.DAT:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	1836	100.0	338	21	AAB09821	Endoglucanase prot
2	1836	100.0	338	23	AAO15052	Rhizopus arrhizus
3	1836	100.0	338	23	ABB08060	R. oryzae CP96001
4	1612	87.8	366	21	AAB09822	Endoglucanase prot
5	1612	87.8	366	23	AAO15053	Rhizopus arrhizus
6	1612	87.8	366	23	ABB08061	R. oryzae CP96001
7	1404	76.5	360	21	AAB09823	Endoglucanase prot
8	1404	76.5	360	23	AAO15054	Rhizopus arrhizus
9	1404	76.5	360	23	ABB08062	R. oryzae CP96001
10	1263.5	68.8	245	23	AAO15063	Endoglucanase-rela
11	1247	67.9	338	21	AAB09824	Endoglucanase prot
12	1247	67.9	338	23	AAO15055	Rhizopus arrhizus
13	1247	67.9	338	23	ABB08063	M. circinelloides
14	1222.5	66.6	387	21	AAB09825	Endoglucanase prot
15	1222.5	66.6	387	23	AAO15056	Rhizopus arrhizus
16	1222.5	66.6	387	23	ABB08064	M. circinelloides
17	1159	63.1	228	23	AAO15062	Endoglucanase-rela
18	1106	60.2	346	21	AAB09826	Endoglucanase prot
19	1106	60.2	346	23	AAO15057	Phycomyces nitens
20	1106	60.2	346	23	ABB08065	P. nitens CP99002
21	761.5	41.5	306	19	AAW44270	Hybrid DNA protein
22	759.5	41.4	225	21	AAY84798	Amino acid sequenc
23	759.5	41.4	225	22	ABB05057	Chrysosporium C1 s
24	756.5	41.2	299	17	AAW04928	Cellulytic enzyme
25	756.5	41.2	299	19	AAW63624	Monocomponent endo
26	755.5	41.1	225	17	AAW04925	Cellulytic enzyme
27	755.5	41.1	297	17	AAW04933	Chimeric endogluca
28	755.5	41.1	308	17	AAW04934	Chimeric endogluca
29	751.5	40.9	200	19	AAW53979	Thielavia terrestr
30	750.5	40.9	204	19	AAW53970	Myceliophthora the
31	743.5	40.5	200	19	AAW53968	Thielavia terrestr
32	738	40.2	223	23	AAO15070	Humicola insolens
33	738	40.2	223	23	AAG80602	Humicola insolens
34	735.5	40.1	200	19	AAW53967	Sordaria fimicola
35	722	39.3	349	17	AAW04927	Cellulytic enzyme
36	718	39.1	310	17	AAW04931	Cellulytic enzyme
37	716.5	39.0	202	19	AAW53972	Macrophomina phase
38	716.5	39.0	222	17	AAW04929	Cellulytic enzyme
39	716.5	39.0	294	17	AAW04937	Chimeric endogluca
40	711.5	38.8	306	19	AAW44269	Hybrid DNA protein
41	709.5	38.6	304	19	AAW44272	Hybrid DNA protein
42	703	38.3	201	19	AAW53966	Volutella collecto
43	701	38.2	307	19	AAW44273	Hybrid DNA protein
44	695.5	37.9	235	18	AAW16542	20K-cellulase from
45	694	37.8	376	12	AAR15272	Fusarium oxysporum

ALIGNMENTS

RESULT 1
AAB09821
ID AAB09821 standard; Protein; 338 AA.
XX
AC AAB09821;
XX
DT 25-SEP-2000 (first entry)
XX
DE Endoglucanase protein sequence 1.
XX
KW Endoglucanase; cellulose breakdown; produce pulp; papermaking;
KW animal foodstuff.
XX
OS Rhizopus oryzae.
XX
PN WO200024879-A1.
XX
PD 04-MAY-2000.
XX
PF 25-OCT-1999; 99WO-JP05884.
XX
PR 23-OCT-1998; 98JP-0302387.
XX
PA (MEIJ) MEIJI SEIKA KAISHA LTD.
XX
PI Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;
PI Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;
XX
DR WPI; 2000-365117/31.
DR N-PSDB; AAA62726.
XX
PT Endoglucanases of fungal origin with high activity under alkaline
PT conditions for production of paper pulp and animal feedstuffs -

XX
PS Claim 44; Page 106-108; 180pp; Japanese.
XX
CC This sequence represents an endoglucanase protein. The invention relates
CC to an endoglucanase of fungal origin which can completely break down
CC purified cellulose at a concentration of less than 1mg protein/litre,
CC and produces more than 50% breakdown of cellulose at pH 8.5. The
CC invention includes endoglucanase protein sequences (see
CC AAB09825-B09830), endoglucanase nucleotide sequences (see
CC AAA62726-A62732) and primers (AAA62733-A62802) which are used in the
CC identification of the endoglucanase sequences, and in the construction of
CC vectors containing the polynucleotides. The endoglucanase enzymes are
CC used for the production of pulp for papermaking and for the production of
CC animal foodstuffs.
XX
SQ Sequence 338 AA;

Query Match 100.0%; Score 1836; DB 21; Length 338;
Best Local Similarity 100.0%; Pred. No. 2.1e-125;
Matches 338; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Db          1 MKFITIASSALLALALGTEMASAAECSKLYGQCGGKNWNGPTCCESGSTCKVSNDYYSQC 60

Qy         61 LPSGSSGNKSSESAHKKTTTAAHKKTTTAAHKKTTTAPAKKTTTVAKASTPSNSSSSSSG 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 LPSGSSGNKSSESAHKKTTTAAHKKTTTAAHKKTTTAPAKKTTTVAKASTPSNSSSSSSG 120

Qy        121 KYSAVSGGASGNGVTTRYWDCCKASCSWPGKANVSSPVKSCNKDGVTALSDSNAQSGCNG 180
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Db        121 KYSAVSGGASGNGVTTRYWDCCKASCSWPGKANVSSPVKSCNKDGVTALSDSNAQSGCNG 180

Qy        181 GNSYMCNDNQPWAVNDNLAYGFAAAAISGGGESRWCCSCFELTFTSTSVAGKKMVVQVTN 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        181 GNSYMCNDNQPWAVNDNLAYGFAAAAISGGGESRWCCSCFELTFTSTSVAGKKMVVQVTN 240

Qy        241 TGGDLGSSTGAHFDLQMPGGGVGIFNGCSSQWGAPNDGWGSRYGGISSASDCSSLPSALQ 300
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        241 TGGDLGSSTGAHFDLQMPGGGVGIFNGCSSQWGAPNDGWGSRYGGISSASDCSSLPSALQ 300

Qy        301 AGCKWRFNWFKNADNPSMTYKEVTCPKEITAKTGCSRK 338
              ||||||||||||||||||||||||||||||||||||||
Db        301 AGCKWRFNWFKNADNPSMTYKEVTCPKEITAKTGCSRK 338
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RESULT 2
AAO15052
ID AAO15052 standard; Protein; 338 AA.
XX
AC AAO15052;
XX
DT 22-AUG-2002 (first entry)
XX
DE Rhizopus arrhizus endoglucanase-related protein 1.
XX
KW Zygomycetes-originated endoglucanase; cellulose binding domain;
KW fibre processing; waste paper de-inking; paper pulp.
XX
OS Rhizopus arrhizus.
XX
PN WO200242474-A1.
XX
PD 30-MAY-2002.
XX
PR 21-NOV-2001; 2001WO-JP10188.
XX
PR 21-NOV-2000; 2000JP-0354296.
XX
PA (MEIJ) MEIJI SEIKA KAISHA LTD.
XX
PI Nakane A, Baba Y, Koga J, Kubota H;
XX
DR WPI; 2002-471729/50.
DR N-PSDB; AAL43244, AAL43250.
XX
PT Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,
PT with effect of endoglucanase activity enhanced in processing fibers,
PT deinking waste paper and improving freeness of paper pulp -
XX
PS Claim 5; Page 54-55; 109pp; Japanese.
XX
CC The invention comprises the amino acid and coding sequences of
CC zygomycetes-originated endoglucanase enzymes lacking the cellulose
CC binding domain. The zygomycetes-originated endoglucanase enzymes of the
CC invention have enhanced endoglucanase activity. The zygomycetes-
CC originated endoglucanase enzymes of the invention are useful for
CC processing fibres, de-inking waste paper and improving the freeness of
CC paper pulp - which is particularly applicable in detergent compositions.
CC The present amino acid sequence represents an endoglucanase-related
CC protein of the invention.
XX
SQ Sequence 338 AA;

Query Match 100.0%; Score 1836; DB 23; Length 338;
Best Local Similarity 100.0%; Pred. No. 2.1e-125;
Matches 338; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Qy          1 MKFITIASSALLALALGTEMASAAECSKLYGQCGGKNWNGPTCCESGSTCKVSNDYYSQC 60
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Db          1 MKFITIASSALLALALGTEMASAAECSKLYGQCGGKNWNGPTCCESGSTCKVSNDYYSQC 60

Qy         61 LPSGSSGNKSSESAHKKTTTAAHKKTTTAAHKKTTTAPAKKTTTVAKASTPSNSSSSSSG 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 LPSGSSGNKSSESAHKKTTTAAHKKTTTAAHKKTTTAPAKKTTTVAKASTPSNSSSSSSG 120

Qy        121 KYSAVSGGASGNGVTTRYWDCCKASCSWPGKANVSSPVKSCNKDGVTALSDSNAQSGCNG 180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        121 KYSAVSGGASGNGVTTRYWDCCKASCSWPGKANVSSPVKSCNKDGVTALSDSNAQSGCNG 180

Qy        181 GNSYMCNDNQPWAVNDNLAYGFAAAAISGGGESRWCCSCFELTFTSTSVAGKKMVVQVTN 240
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Db        181 GNSYMCNDNQPWAVNDNLAYGFAAAAISGGGESRWCCSCFELTFTSTSVAGKKMVVQVTN 240

Qy        241 TGGDLGSSTGAHFDLQMPGGGVGIFNGCSSQWGAPNDGWGSRYGGISSASDCSSLPSALQ 300
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        241 TGGDLGSSTGAHFDLQMPGGGVGIFNGCSSQWGAPNDGWGSRYGGISSASDCSSLPSALQ 300

Qy        301 AGCKWRFNWFKNADNPSMTYKEVTCPKEITAKTGCSRK 338
              ||||||||||||||||||||||||||||||||||||||
Db        301 AGCKWRFNWFKNADNPSMTYKEVTCPKEITAKTGCSRK 338
```

RESULT 3
ABB08060
ID ABB08060 standard; protein; 338 AA.
XX
AC ABB08060;
XX
DT 27-AUG-2002 (first entry)
XX
DE R. oryzae CP96001 RCEI protein.
XX
KW Cellulase; endoglucanase; surfactant; detergent; cellulose; paper;
KW pulp treatment; RCEI.
XX
OS Rhizopus oryzae.
XX
FH Key Location/Qualifiers
FT Peptide 1..23
FT /note= "signal peptide"
FT Protein 24..338
FT /note= "mature protein"
XX
PN WO200238754-A1.
XX

PD 16-MAY-2002
XX
PF 12-NOV-2001; 2001WO-JP09858.
XX
PR 10-NOV-2000; 2000JP-0343921.
XX
PA (MEIJ) MEIJI SEIKA KAISHA LTD.
XX
PI Koga J, Nakane A, Baba Y, Kono T;
XX
DR WPI; 2002-471555/50.
XX
PT Cellulase preparations containing transconjugant-originated
PT endoglucanase and non-ionic surfactants, useful in detergent
PT compositions, in treating cellulose fibers and deinking waste paper and
PT improving freeness of paper pulp -
XX
PS Claim 3; Page 21-22; 38pp; Japanese.
XX
CC The invention relates to a cellulase preparation comprising a
CC transconjugant-originated endoglucanase and a non-ionic surfactant. The
CC endoglucanase is selected from RCEI, RCEII, RCEII, MCEI, MCEII or PCEI
CC proteins. The preparations are useful in detergent compositions, in
CC treating cellulose fibers and deinking waste paper and improving the
CC freeness of paper pulp. The fibers treated by the preparations have
CC reduced feathering and improved skin-feel and appearance with colour
CC clarification, local change in colour and softening, and after deinking
CC and paper pulp treatment, there is an improvement on freeness of the
CC paper pulp. This treatment with the cellulase preparation can be operated
CC at significantly lower cost. The present sequence represents the
CC R. oryzae CP96001 RCEI protein.
XX
SQ Sequence 338 AA;

Query Match 100.0%; Score 1836; DB 23; Length 338;
Best Local Similarity 100.0%; Pred. No. 2.1e-125;
Matches 338; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Qy          1 MKFITIASSALLALALGTEMASAAECSKLYGQCGGKNWNGPTCCESGSTCKVSNDYYSQC 60
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Db          1 MKFITIASSALLALALGTEMASAAECSKLYGQCGGKNWNGPTCCESGSTCKVSNDYYSQC 60

Qy         61 LPSGSSGNKSSESAHKKTTTAAHKKTTTAAHKKTTTAPAKKTTTVAKASTPSNSSSSSSG 120
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Db         61 LPSGSSGNKSSESAHKKTTTAAHKKTTTAAHKKTTTAPAKKTTTVAKASTPSNSSSSSSG 120

Qy        121 KYSAVSGGASGNGVTTRYWDCCKASCSWPGKANVSSPVKSCNKDGVTALSDSNAQSGCNG 180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        121 KYSAVSGGASGNGVTTRYWDCCKASCSWPGKANVSSPVKSCNKDGVTALSDSNAQSGCNG 180

Qy        181 GNSYMCNDNQPWAVNDNLAYGFAAAAISGGGESRWCCSCFELTFTSTSVAGKKMVVQVTN 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        181 GNSYMCNDNQPWAVNDNLAYGFAAAAISGGGESRWCCSCFELTFTSTSVAGKKMVVQVTN 240

Qy        241 TGGDLGSSTGAHFDLQMPGGGVGIFNGCSSQWGAPNDGWGSRYGGISSASDCSSLPSALQ 300
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        241 TGGDLGSSTGAHFDLQMPGGGVGIFNGCSSQWGAPNDGWGSRYGGISSASDCSSLPSALQ 300

Qy        301 AGCKWRFNWFKNADNPSMTYKEVTCPKEITAKTGCSRK 338
              ||||||||||||||||||||||||||||||||||||||
Db        301 AGCKWRFNWFKNADNPSMTYKEVTCPKEITAKTGCSRK 338
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RESULT 4
AAB09822
ID AAB09822 standard; Protein; 366 AA.
XX
AC AAB09822;
XX
DT 25-SEP-2000 (first entry)
XX
DE Endoglucanase protein sequence 2.
XX
KW Endoglucanase; cellulose breakdown; produce pulp; papermaking;
KW animal foodstuff.
XX
OS Rhizopus oryzae.
XX
PN WO200024879-A1.
XX
PD 04-MAY-2000.
XX
PF 25-OCT-1999; 99WO-JP05884.
XX
PR 23-OCT-1998; 98JP-0302387.
XX
PA (MEIJ) MEIJI SEIKA KAISHA LTD.
XX
PI Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;
PI Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;
XX
DR WPI; 2000-365117/31.
DR N-PSDB; AAA62727.
XX
PT Endoglucanases of fungal origin with high activity under alkaline
PT conditions for production of paper pulp and animal feedstuffs -
XX
PS Claim 44; Page 110-113; 180pp; Japanese.
XX
CC This sequence represents an endoglucanase protein. The invention relates
CC to an endoglucanase of fungal origin which can completely break down
CC purified cellulose at a concentration of less than 1mg protein/litre,
CC and produces more than 50% breakdown of cellulose at pH 8.5. The
CC invention includes endoglucanase protein sequences (see
CC AAB09825-B09830), endoglucanase nucleotide sequences (see
CC AAA62726-A62732) and primers (AAA62733-A62802) which are used in the
CC identification of the endoglucanase sequences, and in the construction of
CC vectors containing the polynucleotides. The endoglucanase enzymes are
CC used for the production of pulp for papermaking and for the production of
CC animal foodstuffs.
XX
SQ Sequence 366 AA;

Query Match 87.8%; Score 1612; DB 21; Length 366;
Best Local Similarity 80.6%; Pred. No. 4.1e-109;
Matches 304; Conservative 9; Mismatches 14; Indels 50; Gaps 3;

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              |||||| ||||||||||||||||:||||||||||:||||||||||||||||||||||||
Db          1 MKFITITSSALLALALGTEMASAAKCSKLYGQCGGKDWNGPTCCESGSTCKVSNDYYSQC 60

Qy         61 LPSGSSGNKSS----------------------------------------ESAHKKTTTA 81
              |   |:|||||                                        ||   ||: :
Db         61 LAPESNGNKSSECSKLYGQCGGKDWNGPTCCESGSTCKVSNDYYSQCLAPESNGNKTSES 120

Qy         82 AHKKTTTAAHKKTTTAPAKKTTTVAKASTPSNSSSSSSGKYSAVSGGASGNGVTTRYWDC 141
              ||| |       |||||||: || ||||    :||:|||||| ||||||||||||||||
Db        121 AHKTT-------TTTAPAKEITTTAKAS----NSSNSSGKYSIVSGGASGNGVTTRYWDC 169

Qy        142 CKASCSWPGKANVSSPVKSCNKDGVTALSDSNAQSGCNGGNSYMCNDNQPWAVNDNLAYG 201
              |||||||||||||||||||||||||||||| ||||||||||||||||||||||||||||
Db        170 CKASCSWPGKANVSSPVKSCNKDGVTALSDSNVQSGCNGGNSYMCNDNQPWAVNDNLAYG 229

Qy        202 FAAAAISGGGESRWCCSCFELTFTSTSVAGKKMVVQVTNTGGDLGSSTGAHFDLQMPGGG 261
              ||||||||||||||||||||||||||||||||||:||||||||||||||||||||||||
Db        230 FAAAAISGGGESRWCCSCFELTFTSTSVAGKKMVIQVTNTGGDLGSSTGAHFDLQMPGGG 289

Qy        262 VGIFNGCSSQWGAPNDGWGSRYGGISSASDCSSLPSALQAGCKWRFNWFKNADNPSMTYK 321
              |||||||| ||||||||||||||||||||||||||||||||||||||||||||||||||
Db        290 VGIFNGCSKQWGAPNDGWGSRYGGISSASDCSSLPSALQAGCKWRFNWFKNADNPSMTYK 349

Qy        322 EVTCPKEITAKTGCSRK 338
              |||||||||||||||||
Db        350 EVTCPKEITAKTGCSRK 366
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```
RESULT 5
AAO15053
ID   AAO15053 standard; Protein; 366 AA.
XX
AC   AAO15053;
XX
DT   22-AUG-2002  (first entry)
XX
DE   Rhizopus arrhizus endoglucanase-related protein 2.
XX
KW   Zygomycetes-originated endoglucanase; cellulose binding domain;
KW   fibre processing; waste paper de-inking; paper pulp.
XX
OS   Rhizopus arrhizus.
XX
PN   WO200242474-A1.
XX
PD   30-MAY-2002.
XX
PF   21-NOV-2001; 2001WO-JP10188.
XX
PR   21-NOV-2000; 2000JP-0354296.
XX
PA   (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI   Nakane A,  Baba Y,  Koga J,  Kubota H;
XX
DR   WPI; 2002-471729/50.
DR   N-PSDB; AAL43245.
XX
PT   Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,
PT   with effect of endoglucanase activity enhanced in processing fibers,
PT   deinking waste paper and improving freeness of paper pulp  -
XX
PS   Claim 5; Page 58-60; 109pp; Japanese.
XX
CC   The invention comprises the amino acid and coding sequences of
CC   zygomycetes-originated endoglucanase enzymes lacking the cellulose
CC   binding domain. The zygomycetes-originated endoglucanase enzymes of the
CC   invention have enhanced endoglucanase activity. The zygomycetes-
CC   originated endoglucanase enzymes of the invention are useful for
CC   processing fibres, de-inking waste paper and improving the freeness of
CC   paper pulp - which is particularly applicable in detergent compositions.
CC   The present amino acid sequence represents an endoglucanase-related
CC   protein of the invention.
XX
SQ   Sequence   366 AA;

  Query Match             87.8%;  Score 1612;  DB 23;  Length 366;
  Best Local Similarity   80.6%;  Pred. No. 4.1e-109;
  Matches  304;  Conservative    9;  Mismatches   14;  Indels   50;  Gaps    3;

Qy          1 MKFITIASSALLALALGTEMASAAECSKLYGQCGGKNWNGPTCCESGSTCKVSNDYYSQC 60
              |||||| |||||||||||||||:|||||||||:|||||||||||||||||||||||||
Db          1 MKFITITSSALLALALGTEMASAAKCSKLYGQCGGKDWNGPTCCESGSTCKVSNDYYSQC 60

Qy         61 LPSGSSGNKSS----------------------------------------ESAHKKTTTA 81
              |   |:|||||                                        ||   ||: :
Db         61 LAPESNGNKSSECSKLYGQCGGKDWNGPTCCESGSTCKVSNDYYSQCLAPESNGNKTSES 120

Qy         82 AHKKTTTAAHKKTTTAPAKKTTTVAKASTPSNSSSSSSGKYSAVSGGASGNGVTTRYWDC 141
              ||| |       |||||||: || ||||    :||:|||||| ||||||||||||||||
Db        121 AHKTT-------TTTAPAKEITTTAKAS----NSSNSSGKYSIVSGGASGNGVTTRYWDC 169

Qy        142 CKASCSWPGKANVSSPVKSCNKDGVTALSDSNAQSGCNGGNSYMCNDNQPWAVNDNLAYG 201
              ||||||||||||||||||||||||||||| ||||||||||||||||||||||||||||
Db        170 CKASCSWPGKANVSSPVKSCNKDGVTALSDSNVQSGCNGGNSYMCNDNQPWAVNDNLAYG 229

Qy        202 FAAAAISGGGESRWCCSCFELTFTSTSVAGKKMVVQVTNTGGDLGSSTGAHFDLQMPGGG 261
              ||||||||||||||||||||||||||||||:|||||||||||||||||||||||||||
Db        230 FAAAAISGGGESRWCCSCFELTFTSTSVAGKKMVIQVTNTGGDLGSSTGAHFDLQMPGGG 289

Qy        262 VGIFNGCSSQWGAPNDGWGSRYGGISSASDCSSLPSALQAGCKWRFNWFKNADNPSMTYK 321
              |||||||| ||||||||||||||||||||||||||||||||||||||||||||||||||
Db        290 VGIFNGCSKQWGAPNDGWGSRYGGISSASDCSSLPSALQAGCKWRFNWFKNADNPSMTYK 349

Qy        322 EVTCPKEITAKTGCSRK 338
              |||||||||||||||||
Db        350 EVTCPKEITAKTGCSRK 366


RESULT 6
ABB08061
ID   ABB08061 standard; protein; 366 AA.
XX
AC   ABB08061;
XX
DT   27-AUG-2002  (first entry)
XX
DE   R. oryzae CP96001 RCEII protein.
XX
KW   Cellulase; endoglucanase; surfactant; detergent; cellulose; paper;
KW   pulp treatment; RCEII.
XX
OS   Rhizopus oryzae.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1..23
FT                   /note= "signal peptide"
FT   Protein         24..366
FT                   /note= "mature protein"
XX
PN   WO200238754-A1.
XX
PD   16-MAY-2002.
XX
PF   12-NOV-2001; 2001WO-JP09858.
XX
PR   10-NOV-2000; 2000JP-0343921.
XX
PA   (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI   Koga J,  Nakane A,  Baba Y,  Kono T;
XX
DR   WPI; 2002-471555/50.
XX
PT   Cellulase preparations containing transconjugant-originated
PT   endoglucanase and non-ionic surfactants, useful in detergent
PT   compositions, in treating cellulose fibers and deinking waste paper and
PT   improving freeness of paper pulp  -
XX
PS   Claim 3; Page 23-24; 38pp; Japanese.
XX
CC   The invention relates to a cellulase preparation comprising a
CC   transconjugant-originated endoglucanase and a non-ionic surfactant. The
CC   endoglucanase is selected from RCEI, RCEII, RCEII, MCEI, MCEII or PCEI
CC   proteins. The preparations are useful in detergent compositions, in
CC   treating cellulose fibers and deinking waste paper and improving the
CC   freeness of paper pulp. The fibers treated by the preparations have
CC   reduced feathering and improved skin-feel and appearance with colour
CC   clarification, local change in colour and softening, and after deinking
CC   and paper pulp treatment, there is an improvement on freeness of the
CC   paper pulp. This treatment with the cellulase preparation can be operated
CC   at significantly lower cost. The present sequence represents the
CC   R. oryzae CP96001 RCEII protein.
XX
SQ   Sequence   366 AA;

  Query Match             87.8%;  Score 1612;  DB 23;  Length 366;
  Best Local Similarity   80.6%;  Pred. No. 4.1e-109;
  Matches  304;  Conservative    9;  Mismatches   14;  Indels   50;  Gaps    3;

Qy          1 MKFITIASSALLALALGTEMASAAECSKLYGQCGGKNWNGPTCCESGSTCKVSNDYYSQC 60
              |||||| |||||||||||||||:|||||||||:|||||||||||||||||||||||||
Db          1 MKFITITSSALLALALGTEMASAAKCSKLYGQCGGKDWNGPTCCESGSTCKVSNDYYSQC 60
```

```
Qy         61 LPSGSSGNKSS----------------------------------------ESAHKKTTTA 81
              |   |:|||||                                        ||   ||: :
Db         61 LAPESNGNKSSECSKLYGQCGGKDWNGPTCCESGSTCKVSNDYYSQCLAPESNGNKTSES 120

Qy         82 AHKKTTTAAHKKTTTAPAKKTTTVAKASTPSNSSSSSSGKYSAVSGGASGNGVTTRYWDC 141
              ||| |  .     |||||||: || ||||    :||:|||||| ||||||||||||||||
Db        121 AHKTT-------TTTAPAKEITTTAKAS----NSSNSSGKYSIVSGGASGNGVTTRYWDC 169

Qy        142 CKASCSWPGKANVSSPVKSCNKDGVTALSDSNAQSGCNGGNSYMCNDNQPWAVNDNLAYG 201
              |||||||||||||||||||||||||||||| ||||||||||||||||||||||||||||
Db        170 CKASCSWPGKANVSSPVKSCNKDGVTALSDSNVQSGCNGGNSYMCNDNQPWAVNDNLAYG 229

Qy        202 FAAAAISGGGESRWCCSCFELTFTSTSVAGKKMVVQVTNTGGDLGSSTGAHFDLQMPGGG 261
              |||||||||||||||||||||||||||||||:|||||||||||||||||||||||||||
Db        230 FAAAAISGGGESRWCCSCFELTFTSTSVAGKKMVIQVTNTGGDLGSSTGAHFDLQMPGGG 289

Qy        262 VGIFNGCSSQWGAPNDGWGSRYGGISSASDCSSLPSALQAGCKWRFNWFKNADNPSMTYK 321
              |||||||| ||||||||||||||||||||||||||||||||||||||||||||||||||
Db        290 VGIFNGCSKQWGAPNDGWGSRYGGISSASDCSSLPSALQAGCKWRFNWFKNADNPSMTYK 349

Qy        322 EVTCPKEITAKTGCSRK 338
              |||||||||||||||||
Db        350 EVTCPKEITAKTGCSRK 366
```

RESULT 7
AAB09823
ID AAB09823 standard; Protein; 360 AA.
XX
AC AAB09823;
XX
DT 25-SEP-2000 (first entry)
XX
DE Endoglucanase protein sequence 3.
XX
KW Endoglucanase; cellulose breakdown; produce pulp; papermaking;
KW animal foodstuff.
XX
OS Rhizopus oryzae.
XX
PN WO200024879-A1.
XX
PD 04-MAY-2000.
XX
PF 25-OCT-1999; 99WO-JP05884.
XX
PR 23-OCT-1998; 98JP-0302387.
XX
PA (MEIJ) MEIJI SEIKA KAISHA LTD.
XX
PI Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;
PI Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;
XX
DR WPI; 2000-365117/31.
DR N-PSDB; AAA62728.
XX
PT Endoglucanases of fungal origin with high activity under alkaline
PT conditions for production of paper pulp and animal feedstuffs -
XX
PS Claim 44; Page 115-117; 180pp; Japanese.
XX
CC This sequence represents an endoglucanase protein. The invention relates
CC to an endoglucanase of fungal origin which can completely break down
CC purified cellulose at a concentration of less than 1mg protein/litre,
CC and produces more than 50% breakdown of cellulose at pH 8.5. The
CC invention includes endoglucanase protein sequences (see
CC AAB09825-B09830), endoglucanase nucleotide sequences (see
CC AAA62726-A62732) and primers (AAA62733-A62802) which are used in the
CC identification of the endoglucanase sequences, and in the construction of
CC vectors containing the polynucleotides. The endoglucanase enzymes are
CC used for the production of pulp for papermaking and for the production of
CC animal foodstuffs.
XX

SQ Sequence 360 AA;

Query Match 76.5%; Score 1404; DB 21; Length 360;
Best Local Similarity 73.7%; Pred. No. 4.9e-94;
Matches 266; Conservative 32; Mismatches 39; Indels 24; Gaps 7;

```
Qy          1 MKFITIASSALLALALGTEMASAAECSKLYGQCGGKNWNGPTCCESGSTC--KVSNDYYS 58
              |||:||||||:||||:|||||  ||||||  | |||||||:||||||||||     | :||
Db          1 MKFLTIASSAILALAVGTEMAHAAECSKAYYQCGGKNWDGPTCCESGSTCVDYPDNPFYS 60

Qy         59 QCLPSG--SSGNKSS------ESAHKKTTTAAHKKTTTA----------AHKKTTTAPAK 100
              ||:|:   :| ||||      ||| | |||   |||||           | |||||  |
Db         61 QCVPNENLTSTNKSSHKTTTTESAKKTTTTKGSKKTTTTEASKKTTTTEASKKTTTTEAS 120

Qy        101 K--TTTVAKAST-PSNSSSSSSGKYSAVSGGASGNGVTTRYWDCCKASCSWPGKANVSSP 157
              |  |||  |||| |:||||:|  |||||||||||| |||||||| ||||||||:|:||
Db        121 KKTTTTTKKASTSTSSSSSSASTNYSAVSGGASGNGETTRYWDCCKPSCSWPGKADVTSP 180

Qy        158 VKSCNKDGVTALSDSNAQSGCNGGNSYMCNDNQPWAVNDNLAYGFAAAAISGGGESRWCC 217
              | |||||| | |:|:| |:|| ||:|| ||||||| |:|:|||||||:|||| |: |||
Db        181 VGSCNKDGKT-LADNNTQNGCVGGSSYTCNDNQPWVVSDDLAYGFAAASISGGSEATWCC 239

Qy        218 SCFELTFTSTSVAGKKMVVQVTNTGGDLGSSTGAHFDLQMPGGGVGIFNGCSSQWGAPND 277
              :|||||||||:| |||||||||||| ||||:|||||||||||||||:|||::||||| |
Db        240 ACFELTFTSTAVKGKKMVVQVTNTGSDLGSNTGAHFDLQMPGGGVGIYNGCATQWGAPTD 299

Qy        278 GWGSRYGGISSASDCSSLPSALQAGCKWRFNWFKNADNPSMTYKEVTCPKEITAKTGCSR 337
              |||:||||:|||||||:|||||||||||| ||||||||:||||:||||| ||||:||||
Db        300 GWGARYGGVSSASDCSNLPSALQAGCKWRFGWFKNADNPTMTYKQVTCPKAITAKSGCSR 359

Qy        338 K 338
              |
Db        360 K 360
```

RESULT 8
AAO15054
ID AAO15054 standard; Protein; 360 AA.
XX
AC AAO15054;
XX
DT 22-AUG-2002 (first entry)
XX
DE Rhizopus arrhizus endoglucanase-related protein 3.
XX
KW Zygomycetes-originated endoglucanase; cellulose binding domain;
KW fibre processing; waste paper de-inking; paper pulp.
XX
OS Rhizopus arrhizus.
XX
PN WO200242474-A1.
XX
PD 30-MAY-2002.
XX
PF 21-NOV-2001; 2001WO-JP10188.
XX
PR 21-NOV-2000; 2000JP-0354296.
XX
PA (MEIJ) MEIJI SEIKA KAISHA LTD.
XX
PI Nakane A, Baba Y, Koga J, Kubota H;
XX
DR WPI; 2002-471729/50.
DR N-PSDB; AAL43246.
XX
PT Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,
PT with effect of endoglucanase activity enhanced in processing fibers,
PT deinking waste paper and improving freeness of paper pulp -
XX
PS Claim 5; Page 63-65; 109pp; Japanese.
XX
CC The invention comprises the amino acid and coding sequences of
CC zygomycetes-originated endoglucanase enzymes lacking the cellulose

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CC   binding domain. The zygomycetes-originated endoglucanase enzymes of the
CC   invention have enhanced endoglucanase activity. The zygomycetes-
CC   originated endoglucanase enzymes of the invention are useful for
CC   processing fibres, de-inking waste paper and improving the freeness of
CC   paper pulp - which is particularly applicable in detergent compositions.
CC   The present amino acid sequence represents an endoglucanase-related
CC   protein of the invention.
XX
SQ   Sequence   360 AA;

  Query Match            76.5%;  Score 1404;  DB 23;  Length 360;
  Best Local Similarity   73.7%;  Pred. No. 4.9e-94;
  Matches  266;  Conservative   32;  Mismatches   39;  Indels   24;  Gaps    7;

Qy          1 MKFITIASSALLALALGTEMASAAECSKLYGQCGGKNWNGPTCCESGSTC--KVSNDYYS 58
              |||:||||||:||||:||||| |||||| | |||||||:|||||||||||     | :||
Db          1 MKFLTIASSAILALAVGTEMAHAAECSKAYYQCGGKNWDGPTCCESGSTCVDYPDNPFYS 60

Qy         59 QCLPSG--SSGNKSS------ESAHKKTTTAAHKKTTTA----------AHKKTTTAPAK 100
              ||:|:   :| ||||      ||| | |||   |||||          | |||||  |
Db         61 QCVPNENLTSTNKSSHKTTTTESAKKTTTTKGSKKTTTTEASKKTTTTEASKKTTTTEAS 120

Qy        101 K--TTTVAKAST-PSNSSSSSSGKYSAVSGGASGNGVTTRYWDCCKASCSWPGKANVSSP 157
              |  |||  |||| |:||||:|  |||||||||||| ||||||||| ||||||||:|:||
Db        121 KKTTTTTKKASTSTSSSSSSASTNYSAVSGGASGNGETTRYWDCCKPSCSWPGKADVTSP 180

Qy        158 VKSCNKDGVTALSDSNAQSGCNGGNSYMCNDNQPWAVNDNLAYGFAAAAISGGGESRWCC 217
              | |||||| | |:|:| |:|| ||:|| ||||||| |:|:||||||||:|||| |: |||
Db        181 VGSCNKDGKT-LADNNTQNGCVGGSSYTCNDNQPWVVSDDLAYGFAAASISGGSEATWCC 239

Qy        218 SCFELTFTSTSVAGKKMVVQVTNTGGDLGSSTGAHFDLQMPGGGVGIFNGCSSQWGAPND 277
              :||||||||:| ||||||||||| ||||:||||||||||||||:|||::||||| |
Db        240 ACFELTFTSTAVKGKKMVVQVTNTGSDLGSNTGAHFDLQMPGGGVGIYNGCATQWGAPTD 299

Qy        278 GWGSRYGGISSASDCSSLPSALQAGCKWRFNWFKNADNPSMTYKEVTCPKEITAKTGCSR 337
              |||:||||:|||||||:|||||||||||| ||||||||:||||:||||| ||||:||||
Db        300 GWGARYGGVSSASDCSNLPSALQAGCKWRFGWFKNADNPTMTYKQVTCPKAITAKSGCSR 359

Qy        338 K 338
              |
Db        360 K 360


RESULT 9
ABB08062
ID   ABB08062 standard; protein; 360 AA.
XX
AC   ABB08062;
XX
DT   27-AUG-2002  (first entry)
XX
DE   R. oryzae CP96001 RCEIII protein.
XX
KW   Cellulase; endoglucanase; surfactant; detergent; cellulose; paper;
KW   pulp treatment; RCEIII.
XX
OS   Rhizopus oryzae.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1..23
FT                   /note= "signal peptide"
FT   Protein         24..360
FT                   /note= "mature protein"
XX
PN   WO200238754-A1.
XX
PD   16-MAY-2002.
XX
PF   12-NOV-2001; 2001WO-JP09858.
XX
PR   10-NOV-2000; 2000JP-0343921.
XX
PA   (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI   Koga J,  Nakane A,  Baba Y,  Kono T;
XX
DR   WPI; 2002-471555/50.
XX
PT   Cellulase preparations containing transconjugant-originated
PT   endoglucanase and non-ionic surfactants, useful in detergent
PT   compositions, in treating cellulose fibers and deinking waste paper and
PT   improving freeness of paper pulp  -
XX
PS   Claim 3; Page 25-27; 38pp; Japanese.
XX
CC   The invention relates to a cellulase preparation comprising a
CC   transconjugant-originated endoglucanase and a non-ionic surfactant. The
CC   endoglucanase is selected from RCEI, RCEII, RCEII, MCEI, MCEII or PCEI
CC   proteins. The preparations are useful in detergent compositions, in
CC   treating cellulose fibers and deinking waste paper and improving the
CC   freeness of paper pulp. The fibers treated by the preparations have
CC   reduced feathering and improved skin-feel and appearance with colour
CC   clarification, local change in colour and softening, and after deinking
CC   and paper pulp treatment, there is an improvement on freeness of the
CC   paper pulp. This treatment with the cellulase preparation can be operated
CC   at significantly lower cost. The present sequence represents the
CC   R. oryzae CP96001 RCEIII protein.
XX
SQ   Sequence   360 AA;

  Query Match            76.5%;  Score 1404;  DB 23;  Length 360;
  Best Local Similarity   73.7%;  Pred. No. 4.9e-94;
  Matches  266;  Conservative   32;  Mismatches   39;  Indels   24;  Gaps    7;

Qy          1 MKFITIASSALLALALGTEMASAAECSKLYGQCGGKNWNGPTCCESGSTC--KVSNDYYS 58
              |||:||||||:||||:||||| |||||| | |||||||:|||||||||||     | :||
Db          1 MKFLTIASSAILALAVGTEMAHAAECSKAYYQCGGKNWDGPTCCESGSTCVDYPDNPFYS 60

Qy         59 QCLPSG--SSGNKSS------ESAHKKTTTAAHKKTTTA----------AHKKTTTAPAK 100
              ||:|:   :| ||||      ||| | |||   |||||          | |||||  |
Db         61 QCVPNENLTSTNKSSHKTTTTESAKKTTTTKGSKKTTTTEASKKTTTTEASKKTTTTEAS 120

Qy        101 K--TTTVAKAST-PSNSSSSSSGKYSAVSGGASGNGVTTRYWDCCKASCSWPGKANVSSP 157
              |  |||  |||| |:||||:|  |||||||||||| ||||||||| ||||||||:|:||
Db        121 KKTTTTTKKASTSTSSSSSSASTNYSAVSGGASGNGETTRYWDCCKPSCSWPGKADVTSP 180

Qy        158 VKSCNKDGVTALSDSNAQSGCNGGNSYMCNDNQPWAVNDNLAYGFAAAAISGGGESRWCC 217
              | |||||| | |:|:| |:|| ||:|| ||||||| |:|:||||||||:|||| |: |||
Db        181 VGSCNKDGKT-LADNNTQNGCVGGSSYTCNDNQPWVVSDDLAYGFAAASISGGSEATWCC 239

Qy        218 SCFELTFTSTSVAGKKMVVQVTNTGGDLGSSTGAHFDLQMPGGGVGIFNGCSSQWGAPND 277
              :||||||||:| ||||||||||| ||||:||||||||||||||:|||::||||| |
Db        240 ACFELTFTSTAVKGKKMVVQVTNTGSDLGSNTGAHFDLQMPGGGVGIYNGCATQWGAPTD 299

Qy        278 GWGSRYGGISSASDCSSLPSALQAGCKWRFNWFKNADNPSMTYKEVTCPKEITAKTGCSR 337
              |||:||||:|||||||:|||||||||||| ||||||||:||||:||||| ||||:||||
Db        300 GWGARYGGVSSASDCSNLPSALQAGCKWRFGWFKNADNPTMTYKQVTCPKAITAKSGCSR 359

Qy        338 K 338
              |
Db        360 K 360


RESULT 10
AAO15063
ID   AAO15063 standard; Protein; 245 AA.
XX
AC   AAO15063;
XX
DT   22-AUG-2002  (first entry)
XX
DE   Endoglucanase-related recombinant protein 2.
XX
KW   Zygomycetes-originated endoglucanase; cellulose binding domain;
KW   fibre processing; waste paper de-inking; paper pulp.
XX
```

```
OS   Unidentified.
XX
PN   WO200242474-A1.
XX
PD   30-MAY-2002.
XX
PF   21-NOV-2001; 2001WO-JP10188.
XX
PR   21-NOV-2000; 2000JP-0354296.
XX
PA   (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI   Nakane A,  Baba Y,  Koga J,  Kubota H;
XX
DR   WPI; 2002-471729/50.
XX
PT   Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,
PT   with effect of endoglucanase activity enhanced in processing fibers,
PT   deinking waste paper and improving freeness of paper pulp  -
XX
PS   Example 2; Page 33; 109pp; Japanese.
XX
CC   The invention comprises the amino acid and coding sequences of
CC   zygomycetes-originated endoglucanase enzymes lacking the cellulose
CC   binding domain. The zygomycetes-originated endoglucanase enzymes of the
CC   invention have enhanced endoglucanase activity. The zygomycetes-
CC   originated endoglucanase enzymes of the invention are useful for
CC   processing fibres, de-inking waste paper and improving the freeness of
CC   paper pulp - which is particularly applicable in detergent compositions.
CC   The present amino acid sequence represents an endoglucanase-related
CC   protein of the invention.
XX
SQ   Sequence   245 AA;

  Query Match            68.8%;  Score 1263.5;  DB 23;  Length 245;
  Best Local Similarity   71.6%;  Pred. No. 5e-84;
  Matches  242;  Conservative    0;  Mismatches    3;  Indels   93;  Gaps    1;

Qy          1 MKFITIASSALLALALGTEMASAAECSKLYGQCGGKNWNGPTCCESGSTCKVSNDYYSQC 60
              |||||||||||||||||||||||
Db          1 MKFITIASSALLALALGTEMASAA------------------------------------ 24

Qy         61 LPSGSSGNKSSESAHKKTTTAAHKKTTTAAHKKTTTAPAKKTTTVAKASTPSNSSSSSSG 120
                                                                        |
Db         25 ------------------------------------------------------------LQG 27

Qy        121 KYSAVSGGASGNGVTTRYWDCCKASCSWPGKANVSSPVKSCNKDGVTALSDSNAQSGCNG 180
              |||||||||||||||||||||| ||||||||||||||||||||||||||||||||||||||
Db         28 KYSAVSGGASGNGVTTRYWDCCKPSCSWPGKANVSSPVKSCNKDGVTALSDSNAQSGCNG 87

Qy        181 GNSYMCNDNQPWAVNDNLAYGFAAAAISGGGESRWCCSCFELTFTSTSVAGKKMVVQVTN 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 GNSYMCNDNQPWAVNDNLAYGFAAAAISGGGESRWCCSCFELTFTSTSVAGKKMVVQVTN 147

Qy        241 TGGDLGSSTGAHFDLQMPGGGVGIFNGCSSQWGAPNDGWGSRYGGISSASDCSSLPSALQ 300
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        148 TGGDLGSSTGAHFDLQMPGGGVGIFNGCSSQWGAPNDGWGSRYGGISSASDCSSLPSALQ 207

Qy        301 AGCKWRFNWFKNADNPSMTYKEVTCPKEITAKTGCSRK 338
              |||||||||||||||||||||||||||||||||||||
Db        208 AGCKWRFNWFKNADNPSMTYKEVTCPKEITAKTGCSRK 245


RESULT 11
AAB09824
ID   AAB09824 standard; Protein; 338 AA.
XX
AC   AAB09824;
XX
DT   25-SEP-2000  (first entry)
XX
DE   Endoglucanase protein sequence 4.
XX
KW   Endoglucanase; cellulose breakdown; produce pulp; papermaking;
KW   animal foodstuff.
XX
OS   Mucor circinelloides.
XX
PN   WO200024879-A1.
XX
PD   04-MAY-2000.
XX
PF   25-OCT-1999;   99WO-JP05884.
XX
PR   23-OCT-1998;   98JP-0302387.
XX
PA   (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI   Nakamura Y,  Moriya T,  Baba Y,  Yanai K,  Sumida N,  Nishimura T;
PI   Murashima K,  Nakane A,  Yaguchi T,  Koga J,  Murakami T,  Kono T;
XX
DR   WPI; 2000-365117/31.
DR   N-PSDB; AAA62729.
XX
PT   Endoglucanases of fungal origin with high activity under alkaline
PT   conditions for production of paper pulp and animal feedstuffs  -
XX
PS   Claim 44; Page 120-122; 180pp; Japanese.
XX
CC   This sequence represents an endoglucanase protein. The invention relates
CC   to an endoglucanase of fungal origin which can completely break down
CC   purified cellulose at a concentration of less than 1mg protein/litre,
CC   and produces more than 50% breakdown of cellulose at pH 8.5. The
CC   invention includes endoglucanase protein sequences (see
CC   AAB09825-B09830), endoglucanase nucleotide sequences (see
CC   AAA62726-A62732) and primers (AAA62733-A62802) which are used in the
CC   identification of the endoglucanase sequences, and in the construction of
CC   vectors containing the polynucleotides. The endoglucanase enzymes are
CC   used for the production of pulp for papermaking and for the production of
CC   animal foodstuffs.
XX
SQ   Sequence   338 AA;

  Query Match            67.9%;  Score 1247;  DB 21;  Length 338;
  Best Local Similarity   65.4%;  Pred. No. 1.1e-82;
  Matches  227;  Conservative   40;  Mismatches   62;  Indels   18;  Gaps    6;

Qy          1 MKFITIASSALLALALGTEMASAAECSKLYGQCGGKNWNGPTCCESGSTC--KVSNDYYS 58
              |||    :|  :|||| :  | || || :||||||  |:|||||||||||  :  | |||
Db          1 MKFTVAITSIAVALALSSS-AEAASCSSVYGQCGGIGWSGPTCCESGSTCVAQEGNKYYS 59

Qy         59 QCLPSGSSGNKSSESAHKKTTTAAHKKT-------TTAAHKKTTTAPAKKTTTVAKASTP 111
              ||||  | |  : |: |||:|      |        ||   ||||    ||:| | |||
Db         60 QCLPGSHSNNAGNASSTKKTSTKTSTTTAKATATVTTKTVTKTTTKTTTKTSTTAAAST- 118

Qy        112 SNSSSSSSGKYSAVSGGASGNGVTTRYWDCCKASCSWPGKANVSSPVKSCNKDGVTALSD 171
                 |:|||  |  :||| ||:| |||||||||||||||||:|: || :|  :|:: | |
Db        119 ---STSSSAGYKVISGGKSGSGSTTRYWDCCKASCSWPGKASVTGPVDTCASNGISLL-D 174

Qy        172 SNAQSGCNGGNSYMCNDNQPWAVNDNLAYGFAAAAISGGGESRWCCSCFELTFTSTSVAG 231
              :|||||||||| :|||:|||||||| ||||||||:|:|  |: ||| |:|||||| : :|
Db        175 ANAQSGCNGGNGFMCNNNQPWAVNDELAYGFAAASIAGSNEAGWCCGCYELTFTSGAASG 234

Qy        232 KKMVVQVTNTGGDLGSSTGAHFDLQMPGGGVGIFNGCSSQWGAPNDGWGSRYGGISSASD 291
              |||||||||||||||:   |||||||||||||::||||||||||:||||:|| ||
Db        235 KKMVVQVTNTGGDLGSN---HFDLQMPGGGVGIFNGCAAQWGAPNDGWGARYGGVSSVSD 291

Qy        292 CSSLPSALQAGCKWRFNWFKNADNPSMTYKEVTCPKEITAKTGCSRK 338
              |:|||||||||||||||:|||:||:|||||  |:|  ::||  ||
Db        292 CASLPSALQAGCKWRFNWFKNSDNPTMTFKEVTCPAELTTRSGCERK 338


RESULT 12
AAO15055
ID   AAO15055 standard; Protein; 338 AA.
XX
```

AC AAO15055;
XX
DT 22-AUG-2002 (first entry)
XX
DE Rhizopus arrhizus endoglucanase-related protein 4.
XX
KW Zygomycetes-originated endoglucanase; cellulose binding domain;
KW fibre processing; waste paper de-inking; paper pulp.
XX
OS Mucor circinelloides.
XX
PN WO200242474-A1.
XX
PD 30-MAY-2002.
XX
PF 21-NOV-2001; 2001WO-JP10188.
XX
PR 21-NOV-2000; 2000JP-0354296.
XX
PA (MEIJ) MEIJI SEIKA KAISHA LTD.
XX
PI Nakane A, Baba Y, Koga J, Kubota H;
XX
DR WPI; 2002-471729/50.
DR N-PSDB; AAL43247.
XX
PT Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,
PT with effect of endoglucanase activity enhanced in processing fibers,
PT deinking waste paper and improving freeness of paper pulp -
XX
PS Claim 5; Page 68-70; 109pp; Japanese.
XX
CC The invention comprises the amino acid and coding sequences of
CC zygomycetes-originated endoglucanase enzymes lacking the cellulose
CC binding domain. The zygomycetes-originated endoglucanase enzymes of the
CC invention have enhanced endoglucanase activity. The zygomycetes-
CC originated endoglucanase enzymes of the invention are useful for
CC processing fibres, de-inking waste paper and improving the freeness of
CC paper pulp - which is particularly applicable in detergent compositions.
CC The present amino acid sequence represents an endoglucanase-related
CC protein of the invention.
XX
SQ Sequence 338 AA;

Query Match 67.9%; Score 1247; DB 23; Length 338;
Best Local Similarity 65.4%; Pred. No. 1.1e-82;
Matches 227; Conservative 40; Mismatches 62; Indels 18; Gaps 6;

```
Qy          1 MKFITIASSALLALALGTEMASAAECSKLYGQCGGKNWNGPTCCESGSTC--KVSNDYYS 58
              |||    :|  :|||| :  | || || :|||||  |:||||||||||  :  | |||
Db          1 MKFTVAITSIAVALALSSS-AEAASCSSVYGQCGGIGWSGPTCCESGSTCVAQEGNKYYS 59

Qy         59 QCLPSGSSGNKSSESAHKKTTTAAHKKT-------TTAAHKKTTTAPAKKTTTVAKASTP 111
              ||||   | |  : |: |||:|      |        ||    ||||    ||:| | |||
Db         60 QCLPGSHSNNAGNASSTKKTSTKTSTTTAKATATVTTKTVTKTTTKTTTKTSTTAAAST- 118

Qy        112 SNSSSSSSSGKYSAVSGGASGNGVTTRYWDCCKASCSWPGKANVSSPVKSCNKDGVTALSD 171
                |:|||  |  :||| ||:| ||||||||||||||||||:|: || :|  :|:: | |
Db        119 ---STSSSAGYKVISGGKSGSGSTTRYWDCCKASCSWPGKASVTGPVDTCASNGISLL-D 174

Qy        172 SNAQSGCNGGNSYMCNDNQPWAVNDNLAYGFAAAAISGGGESRWCCSCFELTFTSTSVAG 231
              :|||||||||| :|||:|||||||| ||||||||:|:|  |: ||| |:|||||| : :|
Db        175 ANAQSGCNGGNGFMCNNNQPWAVNDELAYGFAAASIAGSNEAGWCCGCYELTFTSGAASG 234

Qy        232 KKMVVQVTNTGGDLGSSTGAHFDLQMPGGGVGIFNGCSSQWGAPNDGWGSRYGGISSASD 291
              ||||||||||||||:   ||||||||||||||||::||||||||:||||:|| ||
Db        235 KKMVVQVTNTGGDLGSN---HFDLQMPGGGVGIFNGCAAQWGAPNDGWGARYGGVSSVSD 291

Qy        292 CSSLPSALQAGCKWRFNWFKNADNPSMTYKEVTCPKEITAKTGCSRK 338
              |:|||||||||||||||||:|||:||:|||||| |:| ::|| ||
Db        292 CASLPSALQAGCKWRFNWFKNSDNPTMTFKEVTCPAELTTRSGCERK 338
```

RESULT 13
ABB08063
ID ABB08063 standard; protein; 338 AA.
XX
AC ABB08063;
XX
DT 27-AUG-2002 (first entry)
XX
DE M. circinelloides CP99001 MCEI protein.
XX
KW Cellulase; endoglucanase; surfactant; detergent; cellulose; paper;
KW pulp treatment; MCEI.
XX
OS Mucor circinelloides.
XX
FH Key Location/Qualifiers
FT Peptide 1..22
FT /note= "signal peptide"
FT Protein 23..338
FT /note= "mature protein"
XX
PN WO200238754-A1.
XX
PD 16-MAY-2002.
XX
PF 12-NOV-2001; 2001WO-JP09858.
XX
PR 10-NOV-2000; 2000JP-0343921.
XX
PA (MEIJ) MEIJI SEIKA KAISHA LTD.
XX
PI Koga J, Nakane A, Baba Y, Kono T;
XX
DR WPI; 2002-471555/50.
XX
PT Cellulase preparations containing transconjugant-originated
PT endoglucanase and non-ionic surfactants, useful in detergent
PT compositions, in treating cellulose fibers and deinking waste paper and
PT improving freeness of paper pulp -
XX
PS Claim 3; Page 27-29; 38pp; Japanese.
XX
CC The invention relates to a cellulase preparation comprising a
CC transconjugant-originated endoglucanase and a non-ionic surfactant. The
CC endoglucanase is selected from RCEI, RCEII, RCEII, MCEI, MCEII or PCEI
CC proteins. The preparations are useful in detergent compositions, in
CC treating cellulose fibers and deinking waste paper and improving the
CC freeness of paper pulp. The fibers treated by the preparations have
CC reduced feathering and improved skin-feel and appearance with colour
CC clarification, local change in colour and softening, and after deinking
CC and paper pulp treatment, there is an improvement on freeness of the
CC paper pulp. This treatment with the cellulase preparation can be operated
CC at significantly lower cost. The present sequence represents the
CC M. circinelloides CP99001 MCEI protein.
XX
SQ Sequence 338 AA;

Query Match 67.9%; Score 1247; DB 23; Length 338;
Best Local Similarity 65.4%; Pred. No. 1.1e-82;
Matches 227; Conservative 40; Mismatches 62; Indels 18; Gaps 6;

```
Qy          1 MKFITIASSALLALALGTEMASAAECSKLYGQCGGKNWNGPTCCESGSTC--KVSNDYYS 58
              |||    :|  :|||| :  | || || :|||||  |:||||||||||  :  | |||
Db          1 MKFTVAITSIAVALALSSS-AEAASCSSVYGQCGGIGWSGPTCCESGSTCVAQEGNKYYS 59

Qy         59 QCLPSGSSGNKSSESAHKKTTTAAHKKT-------TTAAHKKTTTAPAKKTTTVAKASTP 111
              ||||   | |  : |: |||:|      |        ||    ||||    ||:| | |||
Db         60 QCLPGSHSNNAGNASSTKKTSTKTSTTTAKATATVTTKTVTKTTTKTTTKTSTTAAAST- 118

Qy        112 SNSSSSSSSGKYSAVSGGASGNGVTTRYWDCCKASCSWPGKANVSSPVKSCNKDGVTALSD 171
                |:|||  |  :||| ||:| ||||||||||||||||||:|: || :|  :|:: | |
Db        119 ---STSSSAGYKVISGGKSGSGSTTRYWDCCKASCSWPGKASVTGPVDTCASNGISLL-D 174
```

```
Qy        172 SNAQSGCNGGNSYMCNDNQPWAVNDNLAYGFAAAAISGGGESRWCCSCFELTFTSTSVAG 231
              :||||||||||| :|||:|||||||| |||||||||:|:|  |: ||| |:|||||| : :|
Db        175 ANAQSGCNGGNGFMCNNNQPWAVNDELAYGFAAASIAGSNEAGWCCGCYELTFTSGAASG 234

Qy        232 KKMVVQVTNTGGDLGSSTGAHFDLQMPGGGVGIFNGCSSQWGAPNDGWGSRYGGISSASD 291
              |||||||||||||||:   |||||||||||||||||::||||||||||:||||:|| ||
Db        235 KKMVVQVTNTGGDLGSN---HFDLQMPGGGVGIFNGCAAQWGAPNDGWGARYGGVSSVSD 291

Qy        292 CSSLPSALQAGCKWRFNWFKNADNPSMTYKEVTCPKEITAKTGCSRK 338
              |:|||||||||||||||||:|||:||:|||||| |:| ::|| ||
Db        292 CASLPSALQAGCKWRFNWFKNSDNPTMTFKEVTCPAELTTRSGCERK 338


RESULT 14
AAB09825
ID   AAB09825 standard; Protein; 387 AA.
XX
AC   AAB09825;
XX
DT   25-SEP-2000  (first entry)
XX
DE   Endoglucanase protein sequence 5.
XX
KW   Endoglucanase; cellulose breakdown; produce pulp; papermaking;
KW   animal foodstuff.
XX
OS   Phycomyces nitens.
XX
PN   WO200024879-A1.
XX
PD   04-MAY-2000.
XX
PF   25-OCT-1999;   99WO-JP05884.
XX
PR   23-OCT-1998;   98JP-0302387.
XX
PA   (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI   Nakamura Y,  Moriya T,  Baba Y,  Yanai K,  Sumida N,  Nishimura T;
PI   Murashima K,  Nakane A,  Yaguchi T,  Koga J,  Murakami T,  Kono T;
XX
DR   WPI; 2000-365117/31.
DR   N-PSDB; AAA62730.
XX
PT   Endoglucanases of fungal origin with high activity under alkaline
PT   conditions for production of paper pulp and animal feedstuffs  -
XX
PS   Claim 44; Page 125-127; 180pp; Japanese.
XX
CC   This sequence represents an endoglucanase protein. The invention relates
CC   to an endoglucanase of fungal origin which can completely break down
CC   purified cellulose at a concentration of less than 1mg protein/litre,
CC   and produces more than 50% breakdown of cellulose at pH 8.5. The
CC   invention includes endoglucanase protein sequences (see
CC   AAB09825-B09830), endoglucanase nucleotide sequences (see
CC   AAA62726-A62732) and primers (AAA62733-A62802) which are used in the
CC   identification of the endoglucanase sequences, and in the construction of
CC   vectors containing the polynucleotides. The endoglucanase enzymes are
CC   used for the production of pulp for papermaking and for the production of
CC   animal foodstuffs.
XX
SQ   Sequence   387 AA;

  Query Match             66.6%;  Score 1222.5;  DB 21;  Length 387;
  Best Local Similarity   57.1%;  Pred. No. 7.9e-81;
  Matches  226;  Conservative   40;  Mismatches   63;  Indels   67;  Gaps    6;

Qy          1 MKFITIASSALLALALGTEMASAAECSKLYGQCGGKNWNGPTCCESGSTCKVSND----- 55
              |||    :|  :|||| :  | || || :||||||  | |||||::|||||   |
Db          1 MKFTVAITSIAVALALSSS-AEAASCSSVYGQCGGIGWTGPTCCDAGSTCKAQKDNKYYS 59

Qy         56 ----------------------------------------------YYSQCLPSGSSGNK 69
                                                            |||||| | |
```

```
Db         60 QCIPKPKGSSSSSSCSSVYSQCGGIGWSGPTCCESGSTCVAQEGNKYYSQCLPGSHSNNA 119

Qy         70 SSESAHKKTTTAAHKKT-------TTAAHKKTTTAPAKKTTTVAKASTPSNSSSSSSGKY 122
               : |: |||:|     |       ||    ||||    ||:| | |||    |:|||  |
Db        120 GNASSTKKTSTKTSTTTAKATATVTTKTVTKTTTKTTTKTSTTAAAST----STSSSAGY 175

Qy        123 SAVSGGASGNGVTTRYWDCCKASCSWPGKANVSSPVKSCNKDGVTALSDSNAQSGCNGGN 182
              :||| ||:| |||||||||||||||||:|: || :|  :|:: | |:||||||||||
Db        176 KVISGGKSGSGSTTRYWDCCKASCSWPGKASVTGPVDTCASNGISLL-DANAQSGCNGGN 234

Qy        183 SYMCNDNQPWAVNDNLAYGFAAAAISGGGESRWCCSCFELTFTSTSVAGKKMVVQVTNTG 242
              :|||:|||||||| ||||||||:|:|  |: ||| |:|||||| : :|||||||||||
Db        235 GFMCNNNQPWAVNDELAYGFAAASIAGSNEAGWCCGCYELTFTSGAASGKKMVVQVTNTG 294

Qy        243 GDLGSSTGAHFDLQMPGGGVGIFNGCSSQWGAPNDGWGSRYGGISSASDCSSLPSALQAG 302
              |||||:   ||||||||||||||||::||||||||||:||||:|| |||:|||||||||
Db        295 GDLGSN---HFDLQMPGGGVGIFNGCAAQWGAPNDGWGARYGGVSSVSDCASLPSALQAG 351

Qy        303 CKWRFNWFKNADNPSMTYKEVTCPKEITAKTGCSRK 338
              ||||||||||:|||:||:|||||| |:| ::|| ||
Db        352 CKWRFNWFKNSDNPTMTFKEVTCPAELTTRSGCERK 387


RESULT 15
AAO15056
ID   AAO15056 standard; Protein; 387 AA.
XX
AC   AAO15056;
XX
DT   22-AUG-2002  (first entry)
XX
DE   Rhizopus arrhizus endoglucanase-related protein 5.
XX
KW   Zygomycetes-originated endoglucanase; cellulose binding domain;
KW   fibre processing; waste paper de-inking; paper pulp.
XX
OS   Mucor circinelloides.
XX
PN   WO200242474-A1.
XX
PD   30-MAY-2002.
XX
PF   21-NOV-2001; 2001WO-JP10188.
XX
PR   21-NOV-2000; 2000JP-0354296.
XX
PA   (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI   Nakane A,  Baba Y,  Koga J,  Kubota H;
XX
DR   WPI; 2002-471729/50.
DR   N-PSDB; AAL43248.
XX
PT   Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,
PT   with effect of endoglucanase activity enhanced in processing fibers,
PT   deinking waste paper and improving freeness of paper pulp  -
XX
PS   Claim 5; Page 73-75; 109pp; Japanese.
XX
CC   The invention comprises the amino acid and coding sequences of
CC   zygomycetes-originated endoglucanase enzymes lacking the cellulose
CC   binding domain. The zygomycetes-originated endoglucanase enzymes of the
CC   invention have enhanced endoglucanase activity. The zygomycetes-
CC   originated endoglucanase enzymes of the invention are useful for
CC   processing fibres, de-inking waste paper and improving the freeness of
CC   paper pulp - which is particularly applicable in detergent compositions.
CC   The present amino acid sequence represents an endoglucanase-related
CC   protein of the invention.
XX
SQ   Sequence   387 AA;

  Query Match             66.6%;  Score 1222.5;  DB 23;  Length 387;
  Best Local Similarity   57.1%;  Pred. No. 7.9e-81;
```

Matches 226; Conservative 40; Mismatches 63; Indels 67; Gaps 6;

```
Qy          1 MKFITIASSALLALALGTEMASAAECSKLYGQCGGKNWNGPTCCESGSTCKVSND----- 55
              |||    :|  :|||| :  | || || :||||||  | ||||||::|||||   |
Db          1 MKFTVAITSIAVALALSSS-AEAASCSSVYGQCGGIGWTGPTCCDAGSTCKAQKDNKYYS 59

Qy         56 ---------------------------------------------YYSQCLPSGSSGNK 69
                                                           |||||||   | |
Db         60 QCIPKPKGSSSSSSCSSVYSQCGGIGWSGPTCCESGSTCVAQEGNKYYSQCLPGSHSNNA 119

Qy         70 SSESAHKKTTTAAHKKT-------TTAAHKKTTTAPAKKTTTVAKASTPSNSSSSSSGKY 122
               : |: |||:|     |       ||    ||||    ||:| | |||    |:|||  |
Db        120 GNASSTKKTSTKTSTTTAKATATVTTKTVTKTTTKTTTKTSTTAAAST----STSSSAGY 175

Qy        123 SAVSGGASGNGVTTRYWDCCKASCSWPGKANVSSPVKSCNKDGVTALSDSNAQSGCNGGN 182
              :||| ||:| ||||||||||||||||||:|: || :|  :|:: | |:||||.||||||
Db        176 KVISGGKSGSGSTTRYWDCCKASCSWPGKASVTGPVDTCASNGISLL-DANAQSGCNGGN 234

Qy        183 SYMCNDNQPWAVNDNLAYGFAAAAISGGGESRWCCSCFELTFTSTSVAGKKMVVQVTNTG 242
              :|||:|||||||| ||||||||:|:|  |: ||| |:|||||| : :|||||||||||||
Db        235 GFMCNNNQPWAVNDELAYGFAAAASIAGSNEAGWCCGCYELTFTSGAASGKKMVVQVTNTG 294

Qy        243 GDLGSSTGAHFDLQMPGGGVGIFNGCSSQWGAPNDGWGSRYGGISSASDCSSLPSALQAG 302
              |||||:   |||||||||||||||::||||||||||:||||:|| |||:|||||||||
Db        295 GDLGSN---HFDLQMPGGGVGIFNGCAAQWGAPNDGWGARYGGVSSVSDCASLPSALQAG 351

Qy        303 CKWRFNWFKNADNPSMTYKEVTCPKEITAKTGCSRK 338
              ||||||||||:|||:||:|||||| |:| ::|| ||
Db        352 CKWRFNWFKNSDNPTMTFKEVTCPAELTTRSGCERK 387
```

Search completed: June 18, 2003, 15:30:50
Job time : 39.0454 secs